

WHAT IS CLAIMED IS:

1. A treatment device which is used to perform treatment in a body by being operated outside the body, comprising:

5           a flexible member having a distal end portion which is capable of being inserted into the body; a link mechanism which is arranged at the distal end portion of the flexible member and actuated by an operation outside the body; and

10           a curved needle which is actuated by the link mechanism and is able to move in a direction to puncture a tissue and a direction to be removed from the tissue.

15           2. A device according to claim 1, wherein the treatment device is capable of being inserted into the body along a guide member having an axis and is so held as to be movable with respect to the guide member in an axial direction of the guide member.

20           3. An endoscopic treatment device which is used together with an endoscope to perform treatment in a body by being operated outside the body, comprising:

              a transmission member with a flexible structure which has a distal end portion inserted into a body and is capable of being operated outside the body;

25           a push rod coupled to the distal end portion of the transmission member;

              first and second connecting members coupled to

the push rod, each of the first and second connecting members having a distal end portion and a proximal end portion rotatably coupled to the push rod;

5           first and second arm members each having a distal end portion and a proximal end portion rotatably coupled to the distal end portion of a corresponding one of the first and second connecting members;

10          a holding member which rotatably holds the distal end portions of the first and second arm members at a predetermined interval therebetween;

15          first and second actuating members which are integrally formed with the distal end portions of the first and second arm members and is able to open/close when the transmission member actuates the first and second connecting members and the first and second arm members through the push rod; and

20          a needle which is mounted on at least one of the first and second actuating members and is used to puncture a tissue.

25          4. A device according to claim 3, wherein at least one of the first and second actuating members has at least one tissue fixing means.

5. A device according to claim 3, wherein the needle is a curved needle.

25          6. A device according to claim 3, further comprising protective means for protecting a tissue from the needle.

7. A device according to claim 3, further comprising a suture thread attached to the needle, and recovery means for recovering the thread inserted in the tissue from the needle.

5       8. A device according to claim 3, wherein the treatment device can be inserted into the body along a guide member having an axis and is so held as to be movable with respect to the guide member in an axial direction of the guide member.

10      9. An endoscopic treatment device which is used together with an endoscope to perform treatment in a body by being operated outside the body, comprising:

15      a transmission member with a flexible structure which has a distal end portion to be inserted into a body and is capable of being operated outside the body;

20      a push rod coupled to the distal end portion of the transmission member;

25      first and second connecting members coupled to the push rod, each of the first and second connecting members having a distal end portion and a proximal end portion rotatably coupled to the push rod;

30      first and second arm members each having a distal end portion and a proximal end portion rotatably coupled to the distal end portion of a corresponding one of the first and second connecting members;

35      a holding member which rotatably holds the distal

end portions of the respective arm members at a predetermined interval therebetween;

5 first and second actuating members which are integrally formed with the distal end portions of the arm members and is able to open/close when the transmission member actuates the first and second connecting members and the first and second arm members through the push rod;

10 a needle which is mounted on at least one of the first and second actuating members and is used to puncture a tissue;

a thread attached to the needle; and

recovery means for recovering the thread inserted in the tissue from the needle,

15 wherein the recovery means has a lock member to remove the needle from one of the first and second actuating members.

20 10. A device according to claim 9, wherein the recovery means can move along a direction in which the endoscopic treatment device extends.

11. A device according to claim 9, wherein the thread attached to the needle has at least one large loop and at least one small loop wound around a thread that forms the large loop.

25 12. An endoscopic treatment device which is used together with an endoscope to perform treatment in a body by being operated outside the body, comprising:

a needle which is used to puncture a tissue and to which a thread for suturing the tissue is fixed; and recovery means for recovering the needle inserted in the tissue,

5 . wherein the recovery means has a needle lock member which can lock the needle and a thread lock member which can lock the thread, thereby forming needle/thread fixing means capable of clamping the tissue between the needle locked to the needle lock member and the thread lock member.

10 13. A device according to claim 12, wherein the needle/thread fixing means has a space in which the thread is exposed to the outside and is able to be cut.

15 14. An endoscopic treatment device which is used together with an endoscope to perform treatment in a body by being operated outside the body, comprising:  
a transmission member with a flexible structure which has a distal end portion inserted into a body and a proximal end portion arranged outside the body;

20 a push rod coupled to the distal end portion of the transmission member;

an operating section coupled to the proximal end portion of the transmission member;

25 first and second connecting members coupled to the push rod, each of the first and second connecting members having a distal end portion and a proximal end portion rotatably coupled to the push rod;

first and second arm members each having a distal end portion and a proximal end portion rotatably coupled to the distal end portion of a corresponding one of the first and second connecting members,

5 a holding member which rotatably holds the distal end portions of the arm members;

first and second actuating members which are integrally formed with the distal end portions of the arm members and is movable in opening and closing 10 directions when the operating section moves the first and second connecting members and the first and second arm members with respect to the coupling member through the transmission member and the push rod; and

15 a restricting mechanism which is mounted on one of the first and second actuating members to restrict a movement range of said one actuating member.

15. A device according to claim 14, wherein the restricting mechanism has a force charging member pivotally mounted on said one actuating member and one 20 of the arm members, and a spring which biases said one actuating member in one of the opening and closing directions with respect to the force charging member.

16. An endoscopic treatment device which is used together with an endoscope to perform treatment in 25 a body by being operated outside the body, comprising:

a transmission member with a flexible structure which has a distal end portion inserted into a body and

can be operated outside the body;

a push rod coupled to the distal end portion of the transmission member;

5 first and second connecting members coupled to the push rod, each of the first and second connecting members having a distal end portion and a proximal end portion rotatably coupled to the push rod;

10 first and second arm members each having a distal end portion and a proximal end portion rotatably coupled to the distal end portion of a corresponding one of the first and second connecting members;

a holding member which rotatably holds the distal end portions of the respective arm members at a predetermined interval therebetween;

15 first and second actuating members which are integrally formed with the distal end portions of the arm members and is able to open/close when the transmission member actuates the first and second connecting members and the first and second arm members 20 through the push rod;

a third actuating member which is pivotally attached to the first actuating member;

25 a third connecting member which is pivotally coupled to the holding member and the third actuating member and moves together with the first and second actuating members; and

a needle which is mounted on at least one of the

first and second actuating members and is used to puncture a tissue.

17. A treatment device which is used together with an endoscope to perform treatment in a body by being  
5 operated outside the body, comprising:

a needle which is used to puncture a living tissue and to which a thread for suturing the tissue is fixed;

10 a recovery member capable of recovering the needle inserted into the tissue, the recovery member having an outer periphery portion at which a groove is provided, and an inner hole;

a guide formed in an elongated shape and capable of guiding the recover member;

15 an elongated circular member capable of being inserted into the guide; and

at least one arm provided at a distal end of the elongated circular member,

20 the recovery member being engaged with the elongated circular member when the arm and the groove are located in the guide.

18. A treatment device which is used together with an endoscope to perform treatment in a body by being operated outside the body, comprising:

25 a recovery member capable of recovering a needle punctured into a tissue, the recovery member having an outer periphery portion at which a protrusion is formed;

a guide formed in an elongated shape and having an inner hole, the guide being capable of guiding the recovery member;

5       circular members, having a distal end portion at which a groove has been provided, capable of being inserted into the guide; and

another elongated circular member capable of being inserted into the circular member,

10      wherein, when the protrusion and the groove are engaged with each other, the recovery member and the circular members can be integrally advanced and retracted, and

the elongated circular member and the circular members can be separated from each other.

15      19. A treatment device which is used together with an endoscope to perform treatment in a body by being operated outside the body, comprising:

20      a transmission member with a flexible structure which has a distal end portion inserted into a body and is capable of being operated outside of the body;

a push rod coupled to the distal end portion of the transmission member;

25      first and second connecting members coupled to the push rod, each of the first and second connecting members having a distal end portion and a proximal end portion rotatably coupled to the push rod;

first and second arm members each having a distal

end portion and a proximal end portion rotatably coupled to the distal end portion of a corresponding one of the first and second connecting members;

5 a holding member which rotatably holds the distal end portions of the first and second arm members;

first and second actuating members which are integrally formed with the distal end portions of the first and second arm members and are able to open/close when the transmission member actuates the first and 10 second connecting members and the first and second arm members through the push rod;

a needle which is mounted at least at one of the first and second actuating members and is used to puncture a tissue;

15 a thread mounted on the needle; and

a recovery member capable of recovering the needle,

wherein one of the first and second actuating members has a loop portion, and the recovery member can 20 pass through the loop.

20. A treatment device which is used together with an endoscope to perform treatment in a body by being operated outside the body, comprising:

25 a transmission member with a flexible structure which has a distal end portion inserted into a body and is capable of being operated outside of the body;

a push rod coupled to the distal end portion of

the transmission member;

first and second connecting members coupled to the push rod, each of the first and second connecting members having a distal end portion and a proximal end portion rotatably coupled to the push rod;

5 first and second arm members each having a distal end portion and a proximal end portion rotatably coupled to the distal end portion of a corresponding one of the first and second connecting members;

10 a holding member which rotatably holds the distal end portions of the first and second arm members;

first and second actuating members which are integrally formed with the distal end portions of the first and second arm members and are able to open/close 15 when the transmission member actuates the first and second connecting members and the first and second arm members through the push rod;

a needle which is mounted at least at one of the first and second actuating members and is used to 20 puncture a tissue;

a thread mounted on the needle;

a recovery member capable of recovering the needle; and

an operating member having a cylindrical outer periphery portion at which a groove has been formed and 25 a central axis,

wherein the operating member can operate the

recovery member via the groove when the operating member rotates around the central axis.

21. A suturing method using an endoscopic suturing device, comprising:

5 (1) retaining an insert assisting device into a body;

(2) inserting a suturing device incorporated in the endoscope into the insert assisting device and inserting the suturing device into the body;

10 (3) opening a curved needle of the suturing device;

(4) pushing the curved needle against a sutured region;

(5) puncturing the curved needle into a tissue;

15 (6) recovering the needle by using a recovery member;

(7) removing the curved needle from the tissue;

(8) moving the recovery member close to the sutured region; and

20 (9) returning the recovery member to a predetermined position, and removing the suturing device to the outside of the body by closing the curved needle.